**Appendix A**

**WORK PROCESS SCHEDULE**

**AND**

**RELATED INSTRUCTION OUTLINE Appendix A**

**WORK PROCESS SCHEDULE**

**AUTOMOTIVE TECHNICIAN SPECIALIST – LEAD TECH A**

**O\*NET-SOC CODE: 49-3023.02 RAPIDS CODE: 1034CB**

This schedule is attached to and a part of these Standards for the above identified occupation.

1. **TYPE OF OCCUPATION**

[ ]  Time-based [x]  Competency-based [ ]  Hybrid

1. **TERM OF APPRENTICESHIP**

The term of the occupation is Competency-Based with a recommend minimum of 4,000 OJL supplemented by a minimum of 288 hours of related instruction.

1. **RATIO OF APPRENTICES TO JOURNEYWORKERS**

The apprentice to journeyworker ratio is: one (1) Apprentice to one (1) Journeyworker in the shop.

1. **APPRENTICE WAGE SCHEDULE**

Apprentices shall be paid a progressively increasing schedule of wages based on either a percentage of the current hourly journeyworker wage rate, which is: $22.00 per hour.

**4-Year Term:**

1st 5 competencies + 36-72 hours RTI = 50%

2nd 5 competencies + 36-72 hours RTI = 55%

3rd 5 competencies + 36-72 hours RTI = 60%

4th 5 competencies + 36-72 hours RTI = 65%

5th 5 competencies + 36-72 hours RTI = 70%

6th 5 competencies + 36-72 hours RTI = 75%

7th 3 competencies + 36-72 hours RTI = 80%

8th 3 competencies + 36-72 hours RTI = 85%

1. **WORK PROCESS SCHEDULE** (See attached Work Process Schedule)

The sponsor may modify the work processes to meet local needs prior to submitting these Standards to the appropriate Registration Agency for approval.

1. **RELATED INSTRUCTION OUTLINE** (See attached Related Instruction Outline)

**Appendix A**

**WORK PROCESS SCHEDULE
AUTOMOTIVE TECHNICIAN SPECIALIST-LEAD TECH
O\*NET-SOC CODE: 49-3023.02 RAPIDS CODE: 1034CB**

**Description:** Provide service, repair and maintenance on customer vehicles. Analyze vehicle problems and utilize troubleshooting techniques to determine the needed repair. Utilize hand tools, power tools, lifts and electronic metering devices. Inspect, remove and replace worn and defective parts according to manufactures vehicle scheduled maintenance.

**Term: Competency-Based (Recommended minimum 4,000 OJL)** it is intended that there will be at least 4,000 hours of OJL including with a minimum of 288 hours of related instruction with up to four (4) years to complete the program. During this course the apprentice must demonstrate competence in all the skills outlined below to receive a completion certificate. Apprentices will be afforded the opportunity to demonstrate competence and receive advanced placement in the program.

**On-The-Job Learning:** Apprentices will receive training in the various work experiences listed below. The order in which this training is given will be determined by the flow of work on-the-job and will not necessarily be in the order listed. The times allotted to these various processes are the recommended times which the average apprentice will require to learn each phase of the occupation. They are intended only as a guide to indicate the quality of the training being provided and the ability of the apprentice to absorb this training in an average amount of time. The suggested related instruction supplements OJL, follows the work processes schedule.

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| Competencies | **Minimum Recommended Hours** |
| A. Shop Safety, First Aid and Hazardous Waste Disposal………1. Identify shop hazards and explain the necessary steps to avoid personal injury or property damage.
2. Define the special training and necessary First Aid Steps required to deal with Blood Borne Pathogens.
3. Identify, describe, and record all unsafe or potentially unsafe conditions or acts, environmental noncompliance, malfunctions, and health or industrial hygiene problems.
4. Identify and define hazardous materials by chemical and physical properties, such as: color, corrosivity, density, flammability, reactivity, specific gravity, and toxicity.
 | **120** |
| B. Suspension and Steering…………………………………………1. Diagnose steering column noises, looseness, and binding concerns (including tilt mechanisms); determine necessary action.
2. Diagnose power steering gear (non-rack and pinion) binding, uneven turning effort, looseness, hard steering, and fluid leakage concerns; determine necessary action.
3. Inspect steering shaft universal-joint(s), flexible coupling(s), collapsible column, lock cylinder mechanism, and steering wheel; perform necessary action.
4. Adjust manual or power non-rack and pinion worm bearing preload and sector lash.
5. Remove and replace manual or power rack and pinion steering gear; inspect mounting bushings and brackets.
6. Inspect and replace manual or power rack and pinion steering gear inner tie rod ends (sockets) and bellows boots.
 | **850** |
| C. Brakes………………………………………………………………....1. Research applicable vehicle and service information, such as brake system operation, vehicle service history, service precautions, and technical service bulletins.
2. Diagnose pressure concerns in the brake system using hydraulic principles (Pascal’s Law).
3. Measure brake pedal height; determine necessary action.
4. Diagnose poor stopping, pulling or dragging concerns caused by malfunctions in the hydraulic system; determine necessary action.
5. Inspect, test, and/or replace components of brake warning light system.
6. Diagnose poor stopping, noise, pulling, grabbing, dragging or pedal pulsation concerns; determine necessary action.
7. Clean, inspect, and measure rotor with a dial indicator and a micrometer; follow manufacturer’s recommendations in determining need to machine or replace.
8. Inspect the vacuum-type power booster unit for vacuum leaks; inspect the check valve for proper operation; determine necessary action.
 | **600** |
| D. Electrical/Electronic Systems……………………………………1. Identify and interpret electrical/electronic system concern; determine necessary action.
2. Research applicable vehicle and service information, such as electrical/electronic system operation, vehicle service history, service precautions, and technical service bulletins.
3. Use wiring diagrams during diagnosis of electrical circuit problems.
4. Demonstrate the proper use of a digital multimeter (DMM) during diagnosis of electrical circuit problems.
5. Check electrical circuits with a test light; determine necessary action.
6. Measure source voltage and perform voltage drop tests in electrical/electronic circuits using a voltmeter; determine necessary action.
7. Maintain or restore electronic memory functions.
8. Diagnose charging system for the cause of undercharge, no-charge, and overcharge conditions.
 | **850** |
| E. Engine Performance………………………………………………….1. Identify and interpret maintenance issues per manufacture’s scheduled maintenance.
2. Diagnose abnormal engine noise or vibration concerns; determine necessary action.
3. Perform engine absolute (vacuum/boost) manifold pressure tests; determine necessary action.
4. Inspect throttle body, air induction system, intake manifold and gaskets for vacuum leaks and/or unmetered air.
 | **420** |
| **F. Tire** Remove; replace High Performance, Low Profile monitoring systems. | **105** |
| **G. Heating, Cooling and Air Conditioning…………………………**1. Identification of heating and cooling components and system requirements and procedures.
2. Heating and cooling diagnostics/trouble shooting and repair.
3. Identification of Air Conditioning components and system requirements and procedures.
4. Air Conditioning diagnostics/trouble shooting and repair.
5. Identification and proper handling of refrigerant gasses.
6. Recovery/recycle of refrigerant.
7. IMACA Certification.
 | **450** |
| **H. Driveline………………………………………………………………..** 1. Identification of Driveline components 2.Identify and interpret maintenance requirements per manufacturer’s schedule 3. Identify CV Axles, Bearings, Front and Rear Differentials and Driveline components and the requirements for replacing or servicing  4. Diagnose noise, vibration concerns | **605** |
| **Recommended Minimum Hours of On-The-Job-Learning………………………** | **4,000** |

**RELATED INSTRUCTION OUTLINE**

**AUTOMOTIVE TECHNICIAN SPECIALIST-LEAD TECH**

**O\*NET-SOC CODE: 49-3023.03 RAPIDS CODE: 1034CB**

Related instruction - This instruction shall include, but not be limited to:

**Description:** The following related training outline identifies subject matter that must be mastered by the apprentice in order to successfully complete the program.

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| **Core Skills** | **Minimum Recommended Hours** |
| **A. Safety………………………………………………………………………….**1. Identify and define hazardous materials.
2. Apply federal, state and local regulations when storing and disposing of chemical materials and waste.
 | **10** |
| **B. Brakes…………………………………………………………………………**1. Power assist unit’s diagnosis and repair.
2. Anti-Lock brake system.
 | **20** |
| **C. Electrical/Electronic Systems…………………………………………….**1. Starting system diagnosis and repair.2. Gauges, warning devices and driver information systems diagnosis and repair. 3. Horn and wiper/washer diagnosis and repair. 4. Accessories diagnosis and repair.  | **42** |
| **D. Engine Performance………………………………………………………..**1. General Engine Diagnosis. 2. Computerized Engine Controls Diagnosis and Repair. 3. Ignition System Diagnosis and Repair. 4. Fuel, Air induction and Exhaust systems diagnosis and repair. 5. Emissions Control Systems Diagnosis and Repair. | **65** |
| **E. Tire………………………………………………………………………………**Remove; replace High Performance, Low Profile monitoring systems. | **11** |
| **F. Heating, Cooling and Air Conditioning………………………………….**1. Heating and cooling diagnostics/trouble shooting and repair.
2. Identification of Air Conditioning components and system requirements and procedures.
3. Air Conditioning diagnostics/trouble shooting and repair.
4. Identification and proper handling of refrigerant gasses.
5. Recovery/recycle of refrigerant.
6. Air Conditioning refrigerant retrofits.
7. IMACA Certification.
 | **75** |

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| **G. Manufacture Vehicle Scheduled Maintenance………………………….**1. Manufacture vehicle schedule maintenance of suspension and steering systems.
2. Manufacture vehicle schedule maintenance of brake systems.
3. Manufacture vehicle schedule maintenance of electrical/electronic systems.
4. Manufacture vehicle schedule maintenance of engine performance system.
5. Manufacture vehicle schedule maintenance of tires.
6. Manufacture vehicle schedule maintenance of heating, cooling and Air Conditioning systems.
 | **10** |
| **H. Driveline ………………………………………………………………………..** 1. General Driveline Identification. 2. Driveline Theory and Operation. 3. Driveline Diagnosis and Repair. | **55** |
| **Total Minimum Hours…………………………………………………….** | **288** |